NATIONAL PARK SERVICE
ENVIROFACTS
3/3/99

National Park Service
Hazardous Waste Management &
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LABORATORY CHEMICAL MANAGEMENT

DEFINITIONS

Laboratory: A facility where the "laboratory use of hazardous chemicals" occurs.
Laboratory Use of Hazardous Chemicals: The handling or use of chemicals in which all of the following conditions are met:

- Chemical manipulations are carried out on a "laboratory scale;"
- Multiple chemical procedures or chemicals are used;
- The procedures involved are not part of a production process, nor in any way simulate a production process; and
- Protective laboratory practices and equipment are available and in common use to minimize the potential for employee exposure to hazardous chemicals.

Laboratory Scale: Work with substances in which the containers used for reactions, transfers, and other handling of substances are designed to be easily and safely manipulated by one person.
Hazardous Chemical: A chemical is hazardous for any of the following conditions: (1) it is a combustible liquid, compressed gas, flammable substance, explosive, or organic peroxide, an oxidizer, is unstable, or is water reactive; (2) acute or chronic health effects could occur to exposed individuals; (3) it is a carcinogen or highly toxic; or (4) the manner in which a chemical is manipulated presents an unusual or unique hazard that requires special protective measures.

APPLICABLE STANDARDS

Federal: A chemical hygiene program is required by the Occupational Safety and Health Administration (OSHA) for certain laboratory facilities under 29 CFR 1910.1450, "Occupational Exposure to Chemicals in Laboratories" (the Lab Standard).

State: State regulations relative to the Lab Standard may be more stringent than Federal requirements. The regulations for your state must be reviewed to thoroughly assess your park's compliance requirements.

APPLICABILITY & LIMITATIONS

The Lab Standard applies to all employees engaged in the "laboratory use of hazardous chemicals" (see definition above). These may include laboratory research scientists and curators. Examples of laboratories where the Lab Standard applies include archeological, wildlife, and education or teaching labs.

The Lab Standard **does not** apply to non-laboratory workers, or laboratory workers that do not engage in the "laboratory use of hazards chemicals." For these employees, OSHA's Hazard Communication Standard (HAZCOM) applies. Examples of laboratories that are subject to HAZCOM and not to the Lab Standard include film developing, water and wastewater testing laboratories, and construction materials quality assurance testing laboratories.

CHEMICAL HYGIENE PROGRAM

If a park is engaged in the "laboratory use of hazardous chemicals", the park must establish a written chemical hygiene program that addresses the following elements:

- Designation of a chemical hygiene officer (CHO);
- Hazard controls to protect employees against exposure to hazardous chemicals;
- Procedures to maintain employee exposure below OSHA-mandated permissible exposure levels (PELs) and action levels (ALs);
- Dissemination of technical hazard information;
- Employee training on the hazards of the chemicals in the lab;
- Processes for identifying work that requires review and approval before performance;
- Procedures to ensure that container labels are present, undamaged, not covered, or defaced;
- Maintenance of Material Safety Data Sheets (MSDSs) as the primary means to communicate chemical hazard information to employees;
- Medical consultation and examination; and
- Review of a Chemical Hygiene Plan (CHP) at least annually.

EMPLOYEE EXPOSURE EVALUATIONS

Employee exposure evaluations are to be performed to assure compliance with OSHA exposure limits contained in 29 CFR 1000 Subpart Z. Employee exposure evaluations can include breathing zone monitoring, which measures the degree to which a worker is exposed to a chemical, usually expressed as an 8 hour time weighted average. The results of monitoring are used to determine if the exposure, if any, is acceptable based on comparison with OSHA-mandated PELs and ALs.

HAZARD CONTROLS

When worker exposure evaluations reveal unacceptable levels, one or more of the following hazard controls must be implemented: (1) substitute or eliminate the hazardous chemical with a less hazardous chemical; (2) engineering controls, such as fume hoods, that contain the hazardous chemical; (3) safe work practices; and/or (4) personal protective equipment.

MEDICAL CONSULTATION

Laboratory staff may receive a medical evaluation whenever: (1) they develop signs or symptoms associated with exposure; (2) exposure monitoring reveals an exposure at or above the PEL or AL; or (3) there is a chemical spill, leak, or explosion.

INFORMATION AND TRAINING

All laboratory workers are to be trained in the following elements as part of new employee orientation, and whenever a change in their duties involve the use of a new hazardous chemical:

- The hazards and permissible exposure limits of the materials and/or chemicals present in their work environment;
- The PEL and AL of chemicals present in the lab;
- Signs and symptoms of exposure;
- Location of reference material on chemical hazards, or MSDSs;
- How to protect themselves from these hazards;
- How to recognize accidental spills and personal exposures to hazardous materials; and
- What to do in case of a hazardous material emergency.

Training is to be documented, including names of attendees, the date of training, and the content of training. Training should be conducted by competent individuals in the work area who are familiar with the hazardous materials used.

RECORDKEEPING

All personal exposure monitoring results and training records must be maintained in employee permanent files.

ENVIROFACT X-REFERENCES

- Environmental Training
- Hazard Communication
- Laboratory Waste Management
- Respiratory Protection

LAB STANDARD REGULATORY APPLICABILITY CHECKLIST

Checklist Item	Notes
1. Determine if your park engages in the laboratory use of hazardous chemicals.	
2. If the park does engage in the laboratory use of hazardous chemicals, designate a chemical hygiene officer (CHO) and establish a written Chemical Hygiene Plan (CHP).	
3. Inventory hazardous chemicals used, and how the are used.	
4. Determine if there is evidence that employees may be exposed to hazardous chemicals above OSHA PELs or ALs.	
5. If you suspect employees may be exposed, conduct personal exposure monitoring.	
6. If exposure levels are unacceptable, determine the most cost-effective method to eliminate, or reduce the exposure.	
7. For work practices that are used as hazard controls, document the practices and require employees to comply with the practices.	
8. For engineering controls, ensure the equipment is properly used, maintained, certified, and/or appropriately tested to ensure proper operation.	
9. Ensure the CHO reviews the effectiveness of the CHP at least annually.	
10. Maintain training records.	
11. Seek opportunities to eliminate the need for hazardous chemicals.	